

# Dermaptera from the Three Kings Islands, New Zealand, with the Description of a New Species of *Brachylabis* Dohrn (Labiduridae)

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## ABSTRACT.

A new species of *Brachylabis* Dohrn, 1864 from the Three Kings Islands is described. There is some variation in specimens of *Anisolabis littorea* (White) 1846 from the Islands by comparison with mainland material. An adult ♀ cannot be placed within the genus *Anisolabis* Fieber, 1853. The problem of the isolation of the Three Kings Islands is discussed briefly.

## INTRODUCTION.

The Three Kings Islands are about 35 miles north west of Cape Maria van Dieman, northernmost New Zealand. The group consists of one large island—Great Island, and three smaller ones—North East Island, South West Island and West Island together with a number of islets and rocks. All rise sheer out of 20-30 fathoms of water. The topography and vegetation of the islands are described in a series of papers in the "Records of the Auckland Institute and Museum" commencing in Volume 3, Pt. 4 (1948).

The Dermaptera dealt with here were taken on Great, North East and South West Islands on four visits to the group: The 1946 Autumn Expedition of the Wild Life Branch of the Department of Internal Affairs, the 1947 January trip by Major G. A. Buddle and Major M. E. Johnson, the 1951 January Expedition of the Auckland Institute and Museum and the 1952-53 Summer Expedition of the Auckland Institute and Museum. As far as can be ascertained no other collections of Dermaptera have been made on the islands. The most extensive series comes from Great Island. The amount of material available is only small and doubtless further visits will yield greater numbers of species and of individuals. It is hoped that male earwigs (particularly from the smaller islands) will be sought in future.

## Acknowledgments.

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## SYSTEMATIC.

## Family LABIDURIDAE Verhoeff.

**Labiduridae** Verhoeff, 1902, *Zool. Anz.* 665:189.

## Subfamily BRACHYLABINAE Burr.

*Brachylabinae* Burr, 1909, *Dtsch. ent. Z.*, 1909:324; Burr, 1910, *Trans. ent. Soc. Lond.* 1910:188; Burr, 1911, *Genera Insectorum* 122:40; Burr, 1915, *J. R. micr. Soc.*, 1915:446; Hincks, 1938, *J.F.M.S.Mus.*, 18:306. *Isolabidae* Verhoeff, 1904, *S. B. Ges. naturf. Fr. Berl.*, 1904:119. *Brachylabidae* Burr, 1908, *Ann. Mag. nat. Hist.* (8), 2:247; Zacher, 1911, *Zool. Jb.*, 30:386.

## Genus BRACHYLABIS Dohrn.

*Brachylabis* Dohrn, 1864, *Stettin. ent. Ztg.*, 15:292; Burr, 1910, *Trans. ent. Soc. Lond.* 1910:191; Zacher, 1911, *Zool. Jb.*, 30:388; Burr, 1911, *Genera Insectorum*, 122:41; Hincks, 1938, *J.F.M.S.Mus.*, 18:306.

***Brachylabis manawatawhi*** n. sp. Figs. 1-4.

Of average size for the genus. Apterous. Stout.

**Male:** *Colour* uniformly dark brown, dull; head darker; legs, antennae and palpi lighter; dorsum finely pubescent except head, legs and prothorax; venter more strongly pubescent with a few bristles on posterior margins of sclerites. *Head* small, somewhat elongate; ecdysial suture T-shaped, fine; eyes small, oval, finely faceted, shorter than scape; tentorial maculae just mesad of dorsal angle of eyes; caudal margin nearly straight; antennae missing from ♂ holotype. *Pronotum* as wide as long; narrower cephalad than caudad; anterior and posterior margins truncate; laterally, very slightly sinuate, markedly carinate; caudal angles blunt; ecdysial line distinct. *Mesonotum* short; wider cephalad than caudad; posterior margin slightly concave; sides carinate; caudal angles sharp; ecdysial line faint. *Metanotum* transverse; deeply concave caudad; caudal angles rounded; ecdysial line faint. *Prosternum* rectangular. *Mesosternum* short; sides nearly parallel posteriorly; caudal margin convex. *Metasternum* short; sides divergent cephalad; caudal angles sharp; caudal margin slightly concave. *Abdomen* widest at segments 4 and 5; terga 1 to 8 with narrow cream zone on middle third of caudal margin; posterior edges of terga 3 and 4 notched laterad, the latter the more deeply; tergum 5 with oval finely punctured areas cephalad corresponding with notches of preceding segment; ultimate tergum with blunt lobe above each forceps base, caudal margin concave; terga 1 to 9 bluntly rounded laterally; penultimate sternum ample, with median emargination; manubrium strong, wide, shorter than sclerite. *Pygidium* not prominent, subquadrate, deflexed. *Forceps* symmetrical, non-contiguous, strong basally, tapering to apex, arcuate. *Legs* simple, femora non-carinate, second tarsal segment long. *Genitalia*

double; parameres, flattened, slender, acute, with delicate process distally; penes double; virgae short, stout, with bulb near base.

*Length*—12.5 mm., incl. forceps; forceps 3.5 mm.

**Female:** Agrees with male except that caudal margin of ultimate tergum has sharp tooth above forceps bases with deep excavation between; forceps symmetrical, simple, nearly contiguous, strong basally, tapering sharply at first and then gradually, inner edge sharp and roughened; penultimate sternum ample, caudal margin broadly pointed. *Antennae* 16-jointed, segments cylindrical; lengths in mm., commencing from scape: I, 0.9; II, 0.1; III, 0.35; IV, 0.25; V, 0.3; VI, 0.35; VII, 0.4; VIII, 0.45; IX, 0.5; X, 0.5; XI, 0.5; XII, 0.55; XIII, 0.6; XIV, 0.6; XV, 0.55; XVI, 0.5.

*Length*—16 mm., incl. forceps; forceps 2.3 mm.

**Holotype** male: South West Island, Three Kings Islands, N.Z., 13 January 1951, in forest near summit under stones and leaf mould (*E. G. Turbott*). ALLOTYPE female: With same data. Both specimens in the collection of the Auckland Institute and Museum. PARATYPE females: Great Island, Three Kings Islands, N.Z., 15 January 1951, under grove of trees below rock face E. of saddle, per Berlese funnel (*E. G. Turbott*); in the collection of the South Australian Museum, Reg. No. 120.087. Great Island, Three Kings Islands, N.Z., 26 April 1946, E. division in teatree (*E. G. Turbott*); in the collection of the Auckland Institute and Museum.

The material available to the writer comprises the above specimens together with a female bearing the same data as the  $\delta$  holotype, 2  $\text{♀♀}$  from Great Island, January 1953 (*J. S. Edwards*), and two young nymphs from South West Island, 13 January 1951 (*E. G. Turbott*). It is unfortunate that only a single male has been taken.

This species bears the Maori name for the Three Kings Islands. It clearly belongs to the genus *Brachylabis* Dohrn, 1864 on the basis of the keys and discussion given in Burr (1910). The type of the genus is *B. chilensis* (Blanchard), 1851 from Chile. *B. chilensis* has a transverse sulcus on the pronotum and in the  $\delta$  the posterior abdominal terga are angled laterally, becoming progressively drawn out to a blunt tubercle. The pronotum of *B. coriacea* Burr, 1910 from Brazil is about  $1\frac{1}{2}$  times longer than broad and the mesosternum as broad as long. *B. scotti* Burr, 1910 from the Seychelles Islands is half the length of *B. manawatawhi*, the keel on the mesonotum dies out before the posterior margin is reached and the forceps in the  $\delta$  are asymmetrical—the left being nearly straight and the right only feebly arcuate. *B. canaca* Burr, 1914 from New Caledonia is patterned on the dorsum with fawn stripes, the posterior margin of the pronotum is convex, the sides of the abdominal terga are pointed and the forceps of the male are slightly arcuate. The  $\delta$  genitalia of *B. canaca*, as figured and described by Burr (1915) show some differences: there is only a single virga which apparently lacks the ovoid swelling and the parameres differ in outline and proportions. The Natal species *B. traegaordhi* Burr, 1913 is smaller and the  $\delta$  genitalia (figured in Burr, 1915) differ in the wider

parameres and the finer, bulb-less virgae. *B. manawatawhi* alone has the narrow cream band along the posterior edge of the abdominal terga.

The genus *Brachylabis* has not yet been recorded from the mainland of New Zealand.

### Subfamily CARCINOPHORINAE Hincks

**Carcinophorinae** Hincks, 1947, *Ark. Zool.*, **39A** :4. *Psalinae* Burr, 1909, *Dtsch. ent. Z.*, **1909** :325.

### Genus ANISOLABIS Fieber

*Anisolabis* Fieber, 1853 *Lotos*, **3** :257.

**Anisolabis littorea** (White).

1846, *Forficula littorea* White, *Voy. Erebus and Terror, Ins.*, **2** :24, pl. 6, figs. 4, 5. 1881, *Forficesila littorea* (White) Hutton, *Cat. N.Z. Dipt., Orthopt., Hymenopt.* :93. 1876, *Anisolabis littorea* (White) Scudder, *Proc. Boston Soc. nat. Hist.*, **18** :303. 1904, Hutton, *Index Faunae N.Z.* (London) :234. 1911, Burr, *Genera Insectorum*, **122** :29; 1915, Burr, *J. R. micr. Soc.*, **1915** :534; 1938, Hincks *J. F. M. S. Mus.*, **18** :303. A more complete synonymic list is given by Giles (1953).

The species is represented in the collection by one adult male and four nymphs. The assessment of the developmental stage of the nymphs is based upon an earlier paper (Giles, 1952); this depends on the width of the head capsule (at the widest part behind the eyes) and the numbers of segments in the three regions of the antennae, as detailed there. In some respects the specimens differ from the general facies of mainland individuals. Because of this and the isolated environment it is proposed to deal with each separately. A no less important reason for this procedure is the well-known systematic confusion within the subfamily Carcinophorinae (Hincks 1938: 1954). *Adult Male*—Tasman Valley, Great Island, in kanuka, 18 April 1946 (*E. G. Turbott*).

Head capsule width: 3.5 mm.

Antennal segment counts. Right: 2 + 17

Left: 2 + 17 + 1

This is a most interesting specimen. It is large and somewhat darker than average, but not more so than some the author has examined. It is noteworthy that concerning another island population, Lysaght (1925) records that two ♂♂, six ♀♀ and two nymphs from the Chatham Islands were all "much darker than those of the mainland, the body being completely dark brown."

The appearance of the forceps with their large teeth on the inner edge is immediately noticeable (Fig. 5). This character is exhibited by two specimens the author has examined from Spirits Bay (northernmost New Zealand). One of these, in the collections of the Dominion Museum, Wellington, is figured here (Fig. 6). Generally, mainland specimens have smoother forceps (Fig. 7).

The genitalia of the Three Kings ♂ are identical with mainland specimens. In view of this, and despite the other variations, there is no justification for separating this specimen from *A. littorea*.

**Fifth Instar Nymph.**

Tasman Stream, Great Island, Three Kings, 5 January 1953  
(*J. S. Edwards*).

Head capsule width: 2.95 mm.

Antennal segment counts: Right: 2 + 14 + 3

Left: 2 + 14 + 2

Although the head width is outside the observed range for mainland specimens, it is within the calculated range. The antennal segment count is normal. Its colour is paler, more closely resembling that of mainland specimens. The forceps teeth are unusually strong for a nymph.

**Fifth Instar Nymph.**

Tasman Valley, Great Island, Three Kings, 5 January 1953  
(*J. S. Edwards*).

Head capsule width: 3.15 mm.

Antennal segment counts: Right: 2 + 15 + 2

Left: 2 + 15 + 3

The head width here is outside the calculated range for mainland specimens, but the antennal segment count is normal. This nymph is dark and the forceps are strongly toothed. On the basis of the 10 abdominal segments and the head width, this specimen might be taken for one of the rare instances of an adult male with female-type forceps (*Giles, 1953*). The number of antennal annuli, however, preclude this possibility.

**Fifth Instar Nymph.**

Tasman Valley, Great Island, Three Kings, 5 January 1953  
(*J. S. Edwards*).

Head capsule width: 2.1 mm.

Antennal segment counts: Right: 2 + 15 + 1

Left: 2 + 14 + 1

The head width is within the calculated range for mainland specimens, but is smaller than the observed range. The antennal segment count is normal. This is of paler colour and has nearly smooth forceps.

**Third Instar Nymph.**

South West Island, Three Kings, under low scrub on N.E. slope, per Berlese funnel, 13 January 1951 (*E. G. Turbott*).

Head capsule width: 1.65 mm.

Antennal segment counts: Right: 2 + 9 + 5

Left: 2 + 9 + 5

The head width and antennal counts lie within the third instar range, but the specimen is darker and has stronger teeth on the forceps than mainland specimens.

**First Instar Nymph.**

Great Island, Three Kings, E. division in teatree, 27 April 1946  
(*E. G. Turbott*).

Head capsule width: 1.2 mm.

Antennae missing.

The forceps are noticeably strong and crenulate.

**Anisolabis sp.**

North East Island, Three Kings Is., 4 January 1947 (*G. A. Buddle and M. E. Johnson*).

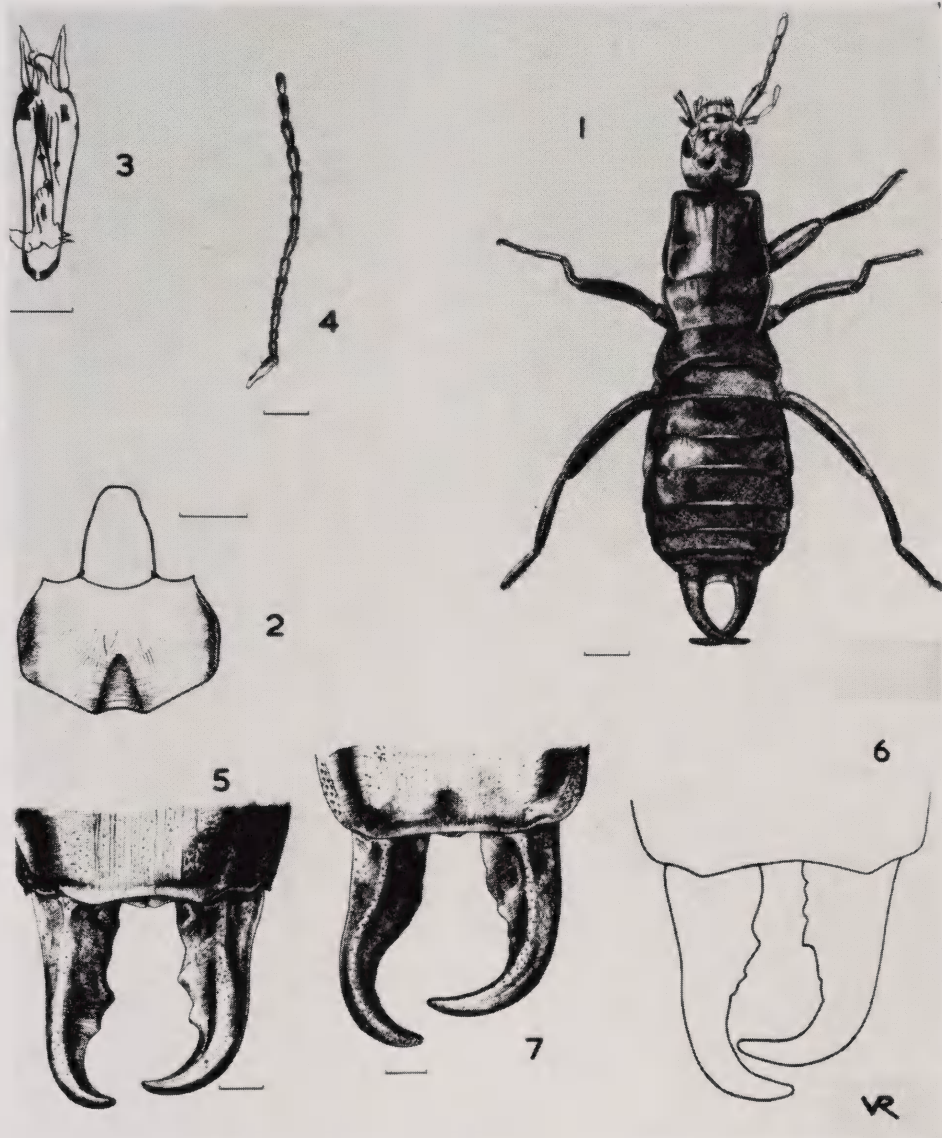
This specimen unfortunately is a female. Certain features, particularly in respect of the forceps, set it apart from females of *A. littorea*, but it would be most unwise in this genus to erect a new species for its reception until a male is collected. The points of divergence are no greater than those shown by the Great Island male dealt with on Page 46; there the genitalia gave the clue to relationships.

The specimens all differ slightly from their mainland equivalents. Although it is probable that earwigs could survive the 35 miles' sea crossing, the precipitous shoreline, and the effect of winds and sea currents in the area would make a successful landing improbable at best. The islands have been cut off since about the early Tertiary and conditions are undoubtedly favourable for the operation of the Sewall Wright effect of genetic "drift" in small populations.

The North Cape block is joined to the North Island by a post-Pleistocene sand tombolo. Males of *A. littorea* from Great Island and North Cape with similar forceps distinct from other mainland examples might indicate that the populations developed on the common land mass, or that one area was colonised from the other after separation—which seems less likely. The possibility of convergence cannot, of course, be overlooked.

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- Fig. 1 *Brachylabis manawatazchi* n. sp., holotype ♂.  
 Fig. 2. *B. manawatazchi* n. sp., penultimate sternum and manubrium of holotype ♂.  
 Fig. 3. *B. manawatazchi* n. sp., genitalia of holotype ♂.  
 Fig. 4. *B. manawatazchi* n. sp., antenna of allotype ♀.  
 Fig. 5. *Anisolabis littorea* (White), forceps of Great Island ♂.  
 Fig. 6. *A. littorea*, outline of forceps of Spirits Bay ♂.  
 Fig. 7. *A. littorea*, forceps of Auckland ♂.

All scale lines represent 1 mm.